A NEW PERUVIAN MUSAPSOCID GENUS AND SPECIES (PSOCOPTERA: MUSAPSOCIDAE)[1]

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ABSTRACT: *Musapsocoides nadleri*, n. gen., n. sp., is described from a pair of specimens collected in Tarma, Perú. It is the sister group to *Musapsocus*, the only other known genus of the family, from which it differs in having three-segmented tarsi, male clunium without papillar or spinous fields, third valvula bilobed apically, subgenital plate with only a few stout setae located medially on distal margin, and in shape and structure of the male epiproct and phallosome and the female spermathecal duct. The discovery of this genus will probably have a considerable impact on the interpretation of the phylogeny of the electrentomoid Psocoptera.

The family Musapsocidae has hitherto included only the genus *Musapsocus* Mockford (1967), which stands well apart from other electrentomoid genera. The genus currently includes eight described species ranging from the tropical lowlands of Mexico south to central Brazil and central Perú (Mockford 1967, 1991). This paper describes a sister taxon to *Musapsocus* collected in west-central Perú. The pair of specimens on which the study was based were mounted in part on slides in Euparal and modified (low chloral hydrate) Hoyer's medium. Measurements were taken with a filar micrometer with measuring unit either 1.36 or 0.99 microns for larger structures and 0.53µ for smaller structures. The following abbreviations were used for parts measured: FW: forewing; HW: hind wing F: hind femur; T: hind tibia; tl, t2, t3: hind tarsomeres 1, 2, 3; P4: fourth segment of maxillary palpus; fl ...fl0: flagellomeres 1 ...10, IO: minimal distance between compound eyes; d: transverse diameter of compound eye. The holotype and allotype will be deposited in the American Museum of Natural History, New York City (AMNH).

Musapsocoides Garcia Aldrete and Mockford, NEW GENUS

Type species: *Musapsocoides nadleri* Garcia Aldrete and Mockford, new species.

Diagnosis. Genus of Family Musapsocidae, sharing with *Musapsocus* the following characters: antennae with 12 segments; frontal ecdysial lines absent; front tibia with well developed comb of stout setae distally on inner margin; anterior pretarsal claw of each foot foliaceous, posterior claw normal with large preapical denticle; wings clear; pterostigma open basally, first segment of Rs in hindwing absent. Differing from *Musapsocus* in the following characters: lacinial tip with lateral cusp relatively short, bifid distally, lacking subapical denticle; tarsi three-segmented; phallo-

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some and hypandrium closely fused, the hypandrium a broad plate fused on its inner surface with phallobase of two rods and connecting membrane; male epiproct a broad, blunt cone with setae limited to a sclerotized band along sides and distal margin; stout setae of distal margin of subgenital plate limited to the middle of the margin and five in number; spermathecal duct bifid.

Musapsocoides nadleri Garcia Aldrete and Mockford, NEW SPECIES

Male color (36 years in 80% alcohol). Body in general and appendages pale straw brown; diffuse reddish purple pigment granules over leg bases and along thoracic pleural sutures. Compound eyes black, ocelli rimmed on inner margins with reddish purple. Wings clear, unmarked, veins brown. Preclunial abdominal segments each with a diffuse, dorso-ventrally oriented subcuticular band of reddish purple pigment; band of segment 2 continuous over the tergum. Genital segments brown.

Male structural characters. Lacinial tip (Fig. 2) with small median cusp, large lateral cusp bifid at apex, and well defined denticle at base of lateral cusp. Wings (Fig. 1) as in *Musapsocus* with vein 2A of forewing ending in membrane. Leg characters as noted in generic diagnosis, also with details as noted in female description. Clunium (Fig. 5) with fields of setae as illustrated. Epiproct (Fig. 5) as noted in generic diagnosis. Paraprocts (Fig. 5) with a pigmented band along mesal edge; sensorium with six trichobothria on weakly defined basal rosettes and three without basal rosettes. Hypandrium (Fig. 4) broad, sparsely setose, slightly concave along hind margin, fused to phallosome internally except hind margin of phallosome deeply emarginate, phallobase mostly semi-membranous except for two rods running most of length of hypandrium, one on each side of posterior emargination of phallosome; distally phallosomal appendages on each side (Fig 4) consisting of a strongly pigmented elongate arm dilated apically, a broad sac bluntly rounded apically with serrate edge, and a membranous mass, probably endophallic, containing round granules

Male measurements (in microns). P4: 69, IO: 198; d: 140; IO/d: 1.41; f1: 160; f2: 160; f3: 178; f4: 208; f5: 148; f6: 144; f7: 87; f8: 108; f9: 101, f10: 94; FW: 1845; HW: 1538; F: 403; T: 752; t1: 295; t2: 72; t3: 63.

Female color (preservation as noted for male). As described for male.

Female structural characters. Lacinial tip (Fig. 6) as described for male, but lateral cusp and denticle at its base shorter and broader. Wings as described and figured for male but vein Sc in forewing very distinct and well separated from R to very near its distal ending in R; areola postica relatively longer (length/greatest height = 4.44, vs. 3.54 in male); vein 2A almost reaching 1A distally. Distal comb of front tibia with 11 stout setae becoming gradually stouter distally, the apical seta (spur) abruptly stouter than the one before it; hind tibia also with row of stout setae in same position, but setae more widely spaced, not forming a comb, and terminating in a single stout spur; hind t1 with eight stout setae ventrally along its length (these setal characters shared with *Musapsocus* but not previously described for that genus). Clunium with scattered setae, its surface sculptured with reticulate areoles bearing minute tubercles. Paraproctal sensorium with 7/8 trichobothria with weakly defined basal rosettes and 7 minute setae without basal rosettes Subgenital plate (Fig. 7) with pair of rounded disto-lateral lobes and slightly raised median distal area bearing transverse row of 5 stout setae; plate internally thickened with 2 pigmented areas sculptured with irregular vermiculations; T sclerite represented by a rod protruding from distal end of plate. Ovipositor valvulae (Fig. 8): v1 a curved blade; v2 hinged to v3 on its outer surface and fused to v3 on its inner surface most of its length, pointed distally; v3 bilobed distally. Spermatheca (Fig. 9): duct broad from external opening to a point ca. one-third distance to sac, there abruptly narrowed and once-branched; one of the resulting two ducts broken in preparation. its final destination unknown; the other duct leading to the sac and widening near sac; sac with a rounded, presumably glandular, area on surface distad of duct opening.

Female measurements (in microns). P4: 69; IO: 212; d: 147; IO/d: 1.45; f1: 148; f2: 191; f3: 205; f4: 212, f5: 155; F6: 146; f7: 94; f8: 114; f9: 114; f10: 102; FW: 1802; HW: 1542; F: 400; T: 726; t1: 282; t2: 52; t3: 60.

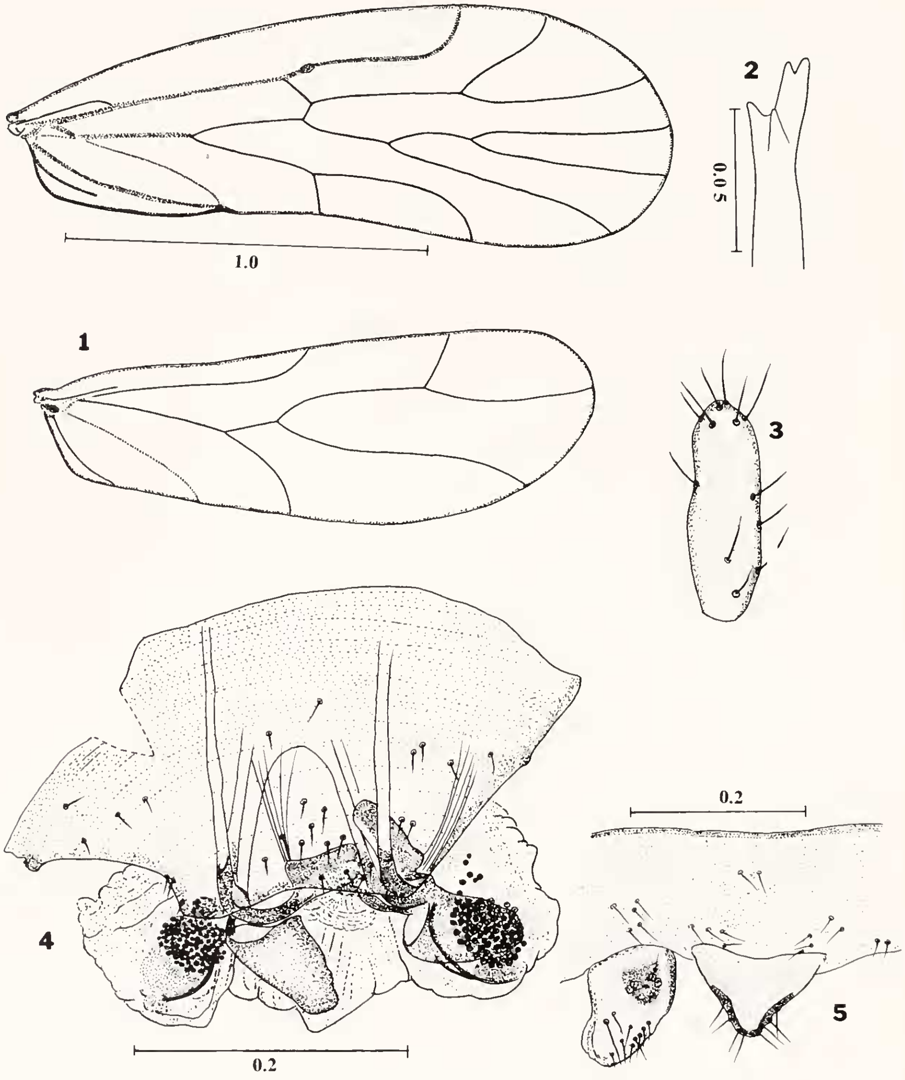

Fig. 1-5. *Musapsocoides nadleri* García Aldrete and Mockford ♂. Fig. 1. Forewing and hind wing. Fig. 2. Lacinial tip. Fig. 3. Fourth segment of maxillary palpus. Fig. 4. Hypandrium and phallosome. Fig. 5. Clunium, left paraproct, and epiproct. Scales in mm. Fig. 3 to scale of Fig. 2.

Material examined Perú: Junín: Río Tarma, Pan de Azúcar (2256 M), 31-xii-1958, A M. Nadler collector, holotype (♂), allotype (♀), AMNH.

Note. Although the collector did not indicate that these two specimens were collected in copula, it seems possible that they were, as the distal structures of the male's phallosome appear to be in copulatory positions.

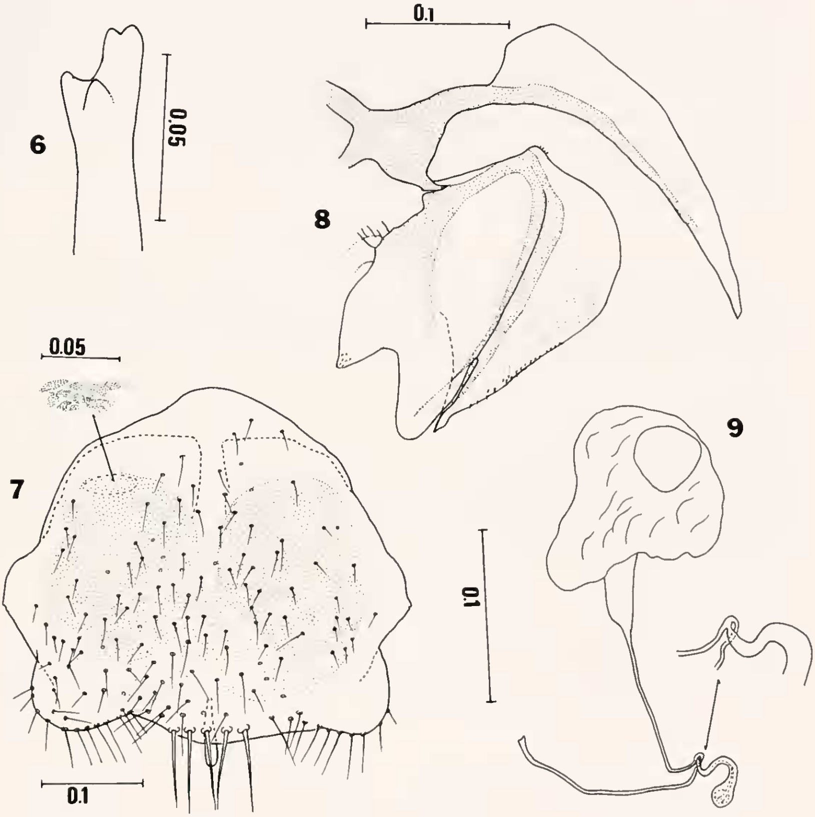

Fig. 6-9. *Musapsocoides nadleri* García Aldrete and Mockford ♀. Fig. 6. Lacinial tip. Fig. 7. Subgenital plate. Fig. 8. Ovipositor valvulae. Fig. 9. Spermatheca.

DISCUSSION

The characters three tarsomeres, short lateral cusp of the lacinia tip, few and centrally located stout setae of distal margin of subgenital plate, and bilobed v3 are probable plesiomorphies for the Musapsocidae. Prior to the discovery of *Musapsocoides,* our lack of knowledge of these characters presented a wide gap between this family (*i.e.,* genus *Musapsocus*) and other electrentomoid groups. This gap is now narrowed. The probable apomorphies of a comb of stout setae distally on the front tibia and reduced number of flagellar segments are shared with several genera of family Troctopsocidae as currently classified, namely *Troctopsocus* Mockford (1967) *Troctopsocopsis* Mockford (1967), *Troctopsoculus* Mockford (1967), and *Coleotroctellus* Lienhard (1988). It seems likely therefore, that the Musapsocidae are most closely related to this cluster of troctopsocid genera, and that the electrentomoid psocids (*sensu* Mockford, 1967) will require re-classification.

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